REMARKS

Reconsideration of the application is respectfully requested for the following reasons:

1. <u>Amendments to Claims</u>

The sole amendments to the claims are (a) an amendment to claim 1 to correct an antecedence error and (b) an amendment of claim 8 to correct a typographic error by deleting the reference to "at least one of the previous claims," which was intended to be deleted by the preliminary amendment submitted with the application, and which makes absolutely no sense in claim 8, which already depends from claim 7.

Because the amendments are formal in nature, it clearly does **not** involve **"new matter."** In addition, they eliminate issues by eliminating grounds for rejection under 35 USC §112 and overcoming the objection under 37 CFR 1.75(c), thereby **reducing the number of issues for appeal**, **without raising any "new issues."** <u>Entry and consideration of the amendments is accordingly requested</u>.

2. <u>Rejection Under 35 USC §112 and Objection Under 37 CFR 1.75(c)</u>

The rejection and objection listed in items 6 and 7 on page 6 of the Official Action have been addressed by amending claim 8 to delete the reference to "at least one of the previous claims."

3. <u>Rejection of Claims 1-14 Under 35 USC §101</u>

This rejection is again respectfully traversed on the ground that claim 1 clearly meets the "machine or transformation" test set forth in the *Bilski* case. Claim 1 recites the steps of:

• *irradiating the value document with light, thereby causing the value document including said luminescent substance to emanate luminescence radiation*, and

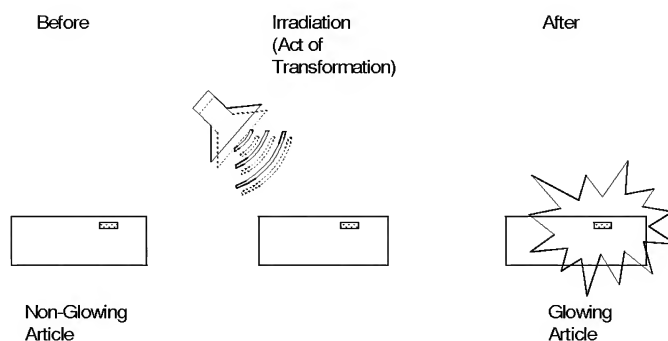• *detecting said luminescence radiation emanating from the value document.*

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Thus, claim 1 recites that a value document is irradiated, which transforms the value document from a document that does not emanate luminescence radiation into one that does emanate luminescence radiation. In other words, these steps cause the value document, which is an <u>article or thing</u> within the meaning of the *Bilski* test, to <u>transform</u> from the <u>state</u> of non-luminescence to the state of luminescence. Transforming an article from a state in which is does not "glow" into one in which it does "glow" is clearly a physical transformation within the meaning of the *Bilski* test since glowing is clearly a different state than not glowing.

The recited "irradiation" step is clearly not a mental step, a step performed by a general purpose computer, or a step that occurs in nature. There is therefore no logical reason to consider claim 1 to be a non-statutory method claim. When the document is irradiated, the electrons in the authenticity feature are raised to an excited state, and release photons as they return to their previous state, which is what causes the substance to luminesce. Radiation, while invisible to a human, is nevertheless a physical entity and irradiating an article, such as a document of value, is just as much a physical process as hitting it with a hammer, subjecting it to flames, or any other traditional process. In the context of the claimed invention, irradiation is central to the process, and not just an insignificant post or pre-solution activity. Without the irradiating step, which can only be carried out by a machine, the remainder of the steps of the claimed process, including the mathematical steps, are completely meaningless.

Transformation from Non-Luminescent State to Luminescent State

Before — Irradiation (Act of Transformation) — After

Non-Glowing Article — Glowing Article

Recently, the Federal Circuit considered whether administering a drug to a patient and measuring the result involved a "transformation" within the meaning of the *Bilski* machine or transformation test. The conclusion, set forth in *Prometheus Labs. V. Mayo Clinic* (Fed. Cir.

2009), was that administering a drug to a patient involved a transformation.[1] If administering a drug to a patient is a "transformation" within the meaning of the *Bilski* test, then zapping an article with radiation to cause it to glow is certainly a transformation. Furthermore, the Court cited with approval a case, *In re Abele*, in which the sole "transformation" was to take an x-ray of a patient and perform mathematical operations on the result, the court considering the taking of an x-ray (which basically involves *irradiating* a patient) to involve a "transformation."[2] If taking an x-ray is a transformation, then so is irradiating a document of value in order to make it glow (in fact, an x-ray does not transform the patient (hopefully) whereas the claimed irradiation does transform the document of value, so the claimed transformation is even more clearly a physical transformation than the "transformation" approved by the court in the *Abele* and *Prometheus* cases.

Because irradiating a document of value and causing it to luminesce is clearly a "transformation" within the meaning of the *Bilski* test, withdrawal of the rejection of claims 1-14 under 35 USC §101 is respectfully requested.

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[1] According to page 16 of the *Prometheus* opinion (Advance Sheet), '[t]the fact that the change of the administered drug into its metabolites relies on natural processes does not disqualify the administering step from the realm of patentability. As Prometheus points out, quite literally every transformation of physical matter can be described as occurring according to natural processes and natural law. Transformations operate by natural principles. The transformation here, however, is the result of the physical administration of a drug to a subject to transform—i.e., treat—the subject, which is itself not a natural process. 'It is virtually self-evident that a process for a chemical or physical transformation of physical objects or substances is patent-eligible subject matter.' See Bilski, 545 F.3d at 962. "

[2] As explained on page 20 of the Advance Sheet, "[t]his analysis is consistent with In re Abele, 684 F.2d 902 (CCPA 1982).4 In Abele, a method claim called for the use of X-ray attenuation data, which necessarily involved production, detection, and display with a CAT scan. The method also called for use of an algorithm. We found that the claim was patentable because removal of the algorithm still left all the steps of a CAT scan in the claim; thus, the production and detection could not be considered "mere antecedent steps to obtain values for solving the algorithm. . . . We view the production, detection, and display steps as manifestly statutory subject matter, and are not swayed from this conclusion by the presence of an algorithm in the claimed method." Id. at 908. In the instant case, the presence of the mental steps similarly does not detract from the patentability of the administering and determining steps.

3.   Rejection of Claims 1-11 and 15 Under 35 USC §102(b) in view of U.S. Patent No. 5,678,677 (Baudat)

This rejection is again respectfully traversed on the grounds that the Baudat patent fails to disclose or suggest a method of determining whether an authenticity feature is present in a value document by:

- detecting a **luminescence radiation** spectrum emanating from the document (*i.e.*, the claimed "different frequencies and/or frequency domains of the luminance radiation");

- forming a measuring vector from the spectrum; and

- checking whether the measuring vector is located in an "allocation area" corresponding to a given reference vector (the reference vector corresponding to an authenticity feature).

Instead of teaching detection of luminescence radiation, the Baudat patent teaches detection of an object's reflectivity.

The Examiner's reply was as follows:

In response to applicant's remark that "luminescence radiation" differs from Baudat's teachings because luminescence radiation is emanated if a physical system passes from an excited state into a low-energy state. It is noted that claim language is given its broadest reasonable interpretation. The specification is not measure of invention. Therefore, limitations contained therein can not be read int the claims for the purpose of avoiding the prior art [page 4 of the Official Action].

This reply makes no sense. The Applicant is clearly not asking the Examiner to read limitations from the specification into the claims. Instead, the Applicant's argument is simply that a limitations explicitly set forth in the claim, namely *"**irradiating a document of value**"* and ***"detecting the luminescence radiation emanating from the document of value"*** are not taught by the Baudat patent. Therefore, the Baudat patent does not anticipate the claimed invention.

The Applicant is only asking the Examiner to consider language that is positively recited in the claims. The claims recite causing luminescence and detecting the luminescence. The reference concerns detecting and analyzing reflections. While the Applicant agrees that language should be given "its broadest reasonable interpretation," the Applicant respectfully submits that

interpreting the claimed **luminescence** detection and analysis as reading on **reflectivity** analysis is not even close to being a <u>reasonable</u> interpretation. Giving language its broadest reasonable interpretation is not a license to completely ignore the usual or technical meaning of the claim language.

The argument concerning excited and low energy states was meant to help the Examiner understand the difference between light caused by luminescence and reflected light. In other words, the Applicant simply wished to point out that **causing luminescence** involves a tangibly different physical process (transformation) than **shining light on a document and having it reflect**. <u>The claims of the application recited the former, whereas Baudat only teaches the latter</u>.

As explained in the previous response, Baudat teaches a system for recognizing the denomination of bank notes based on classification of n-dimensional measuring vectors whose components are determined by <u>scanning</u> the surface of the object, *i.e.*, based a **reflectivity** of the object's surface. The measuring values are preselected component-wise in order to exclude forgery in a preprocessing step (performed by the "preliminary processing system" described in col. 4, lines 43-65 of the Baudat patent), and the remaining vectors are then, in a subsequent classification step, allocated to **pattern classes** i defined by target vectors W_i, which represent possible **denominations** of the bank note. Allocation of the vectors to the class is carried out by using a minimum distance classifier, as described in col. 6, lines 32-50, since the measuring vector X is assigned to the class i whose target vector W_i has the minimal distance to the measuring vector X according to a predetermined metric. **As a result, Baudat clearly does not teach the invention *as claimed* (with no need to import limitations from the specification) because it does not disclose or suggest either irradiation of a document of value or detection of the resulting luminescence radiation**.

Furthermore, the claimed method differs from the method of Baudat in that the claimed invention checks whether the measuring vector is in a particular "object location area," whereas Baudat simply assigns measuring values to the closest class. <u>In the claimed invention, the</u>

measuring vector may or may not be in a particular object location area, depending on whether an authentication feature is present in the document, and therefore the claimed invention *checks whether or not the measuring vector is in the area*. Again, this is not a matter of giving the claim language its broadest reasonable interpretation, as argued by the Examiner in item d on page 4 of the Official Action. The claims specifically recite

> . . .*allocating at least one object allocation area. . .to each reference vector and* ***checking which object allocation area. . .the measuring vector. . .is located in*** *to determine whether an authenticity feature corresponding to one of the reference vectors is present in the value document* [claim 1].

The Examiner will note that the claims in fact contain a recitation of **checking whether the measuring vector is in a particular object allocation area** (by checking which object allocation area the measuring vector is located in), as previously argued. Again, the Applicant is not asking the Examiner to import limitations from the specification, but rather to consider what is actually claimed. Since the Baudat patent merely discloses comparing measuring values and classes to find the closest class, without performing the additional *positively claimed* steps of generating allocation areas corresponding to the reference vectors and checking whether the measuring vectors are within the allocation areas, as argued in the previous response, the method of Baudat cannot anticipate the claimed invention. To "interpret" a recitation of generating allocation areas and checking where the measuring vectors are located as reading on a method that does no checking of allocation areas is not a matter of providing the "broadest reasonable interpretation."

Furthermore, this is not an insignificant difference, but rather a fundamental difference in the way the respective luminescence spectra and reflectivity patterns are analyzed. Instead, of locating measuring vectors, Baudat automatically assigns a measuring value to the closest pattern class. Because every note has a denomination, Baudat assumes that whatever class the measuring values are closest to is in fact the class to which the measuring values belong (once the note has been determined to be authentic in a preprocessing step). Baudat therefore does consider the possibility that the measuring vector might not be in any class, since this possibility if addressed

in an entirely separate preprocessing step that does not determine denomination or any other feature of the scanned note, but rather merely determines whether processing should continue.

It is true that col. 4 of Baudat mentions an "allocation," but the "allocation" described in col. 4 of the Baudat patent has nothing to do with the claimed "allocation." Instead, the allocation described in col. 4 of Baudat is part of a preprocessing step that is entirely separate from the class assignment step used to determine denomination. The preprocessing step is used solely to determine if the processing should continue, and does not result in any identification of an authentication feature, much less a classification depending on luminescent spectra or allocation of measuring *vectors* based on the spectra to areas that correspond to reference values. In Baudat, if the measuring values are outside different areas, then the document is a forgery, and further processing is ended. Unlike the claimed allocation areas, the relevant areas of Baudat do not correspond to reference vectors and do not identify any particular features. Instead, if the measuring values are inside any area, then the method of Baudat proceeds to find the closes pattern class. <u>At no time does Baudat check whether the measuring values are in *one* of a plurality of areas in order to determine the presence of a feature corresponding to the area</u>.

In summary, the Baudat patent does not disclose or suggest the claimed irradiation and detection of luminescence radiation spectra, much less the identification of authentication features based on whether a measuring vector is present in an allocation area, the allocation corresponding to a reference vector identified with a particular authentication feature. To the contrary, Baudat does not involve a *spectral* analysis, and cannot be used for such an analysis, not only because Baudat's scanning does not generate a spectrum, but also because the pattern matching method of Baudat, in which measurement values are assigned to a closest class, is not suitable for such a spectral analysis. As a result, withdrawal of the rejection of claims 1-11 and 15 under 35 USC § 102(b) is respectfully requested.

4. Rejection of Claims 12-14 Under 35 USC §103(a) in view of U.S. Patent Nos. 5,678,677 (Baudat) and 7,330,606 (Yakhini)

This rejection is again respectfully traversed on the grounds that the Yakhini patent, like the Baudat patent, fails to disclose or suggest a method of determining whether an authenticity feature is present in a value document by detecting a **luminescence radiation** spectrum emanating from the document; forming a measuring vector from the spectrum; and checking whether the measuring vector is located in an "allocation area" corresponding to a given reference vector (the reference vector corresponding to an authenticity feature), as recited in claim 1, from which claims 12-14 depend. Instead, Yakhini is directed to an method for evaluating the orientation of a molecular array obtained by scanning the molecular array to determine data signals emanating from discrete positions on a surface of the array. As a result, it is respectfully submitted that the Yakhini patent does not suggest either the claimed *luminescence* spectrum or the claimed determination of the presence of authentication features (or any other features) by determining whether measuring vectors based on the spectrum are present in a particular area allocated to a reference vector, as claimed.

Consequently, it is respectfully submitted that the Baudat and Yakhini patents, whether considered individually or in any reasonable combination, fail to disclose or suggest the claimed invention, and withdrawal of the rejection of claims 12-14 under 35 USC §103(a) is respectfully requested.

Having thus overcome each of the rejections made in the Official Action, withdrawal of the rejections and expedited passage of the application to issue is requested.

Respectfully submitted,

BACON & THOMAS, PLLC

/Benjamin E. Urcia/

Date: September 30, 2009   By: BENJAMIN E. URCIA
                                      Registration No. 33,805

Serial Number **10/535,409**

BACON & THOMAS, PLLC
625 Slaters Lane, 4th Floor
Alexandria, Virginia 22314

Telephone: (703) 683-0500

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